



SEQUENCE LISTING

<110> YAO, YONG
XU, HONG

<120> G-ALPHA-Q PROTEIN VARIANTS AND THEIR USE IN THE
ANALYSIS AND DISCOVERY OF AGONISTS AND ANTAGONISTS OF
CHEMOSENSORY RECEPTORS

<130> 078003-0280735

<140> 09/989,497

<141> 2001-11-21

<150> 09/984,292

<151> 2001-10-29

<150> 60/243,770

<151> 2000-10-30

<160> 42

<170> PatentIn Ver. 2.1

<210> 1

<211> 359

<212> PRT

<213> Mus sp.

<400> 1

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
115 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
 165 170 175
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Glu Tyr Asn Leu Val
 355

<210> 2
 <211> 353
 <212> PRT
 <213> Mus sp.

<400> 2
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
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 Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
 50 55 60
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr Val Asp Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
 340 345 350
 Val

<210> 3
<211> 359
<212> PRT
<213> Mus sp.

<400> 3																	
Met	Thr	Leu	Glu	Ser	Ile	Met	Ala	Cys	Cys	Leu	Ser	Glu	Glu	Ala	Lys		
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Glu	Ala	Arg	Arg	Ile	Asn	Asp	Glu	Ile	Glu	Arg	Gln	Leu	Arg	Arg	Asp		
			20					25					30				
Lys	Arg	Asp	Ala	Arg	Arg	Glu	Leu	Lys	Leu	Leu	Leu	Leu	Gly	Thr	Gly		
		35					40					45					
Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly		
	50					55					60						
Ser	Gly	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr		
65					70					75					80		
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr		
				85					90					95			
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu		
			100					105					110				
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp		
		115					120					125					
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys		
		130				135					140						
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr		
145					150					155					160		
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ser	Tyr	Leu	Pro	Thr	Gln		
				165					170					175			
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr		
			180					185					190				
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly		
		195					200					205					
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr		
		210				215					220						
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val		
225					230					235					240		
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg		
				245					250					255			

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Leu Val
355

<210> 4
<211> 353
<212> PRT
<213> Mus sp.

<400> 4
Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
1 5 10 15

Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
145 150 155 160

Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
340 345 350

Val

<210> 5

<211> 353

<212> PRT

<213> Mus sp.

<400> 5

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
1 5 10 15

Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
 340 345 350
 Val

<210> 6
 <211> 353
 <212> PRT
 <213> Mus sp.

<400> 6
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
 50 55 60
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Asp Cys Gly Leu
 340 345 350

Phe

<210> 7
 <211> 357
 <212> PRT
 <213> Mus sp.

<400> 7
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
 50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160

Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Asn Met Arg Arg Asp Val Lys
305 310 315 320

Glu Ile Tyr Ser His Met Thr Cys Ala Thr Asp Thr Gln Asn Val Lys
325 330 335

Phe Val Phe Asp Ala Val Thr Asp Ile Ile Ile Lys Glu Asn Leu Lys
340 345 350

Asp Cys Gly Leu Phe
355

<210> 8
<211> 353
<212> PRT
<213> Mus sp.

<400> 8
Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
 340 345 350

Val

<210> 9

<211> 359

<212> PRT

<213> Mus sp.

<400> 9

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
 35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
 115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
 165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Leu Val
355

<210> 10

<211> 359

<212> PRT

<213> Mus sp.

<400> 10

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Glu Tyr Asn Leu Val
 355

<210> 11
 <211> 359
 <212> PRT
 <213> Mus sp.

<400> 11
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
 35 40 45
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60
 Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
 115 120 125
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
 165 170 175
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Glu Tyr Asn Leu Val
 355

<210> 12
 <211> 359
 <212> PRT
 <213> Mus sp.

<400> 12

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly
 35 40 45
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60
 Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
 115 120 125
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
 165 170 175
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Asp Cys Gly Leu Phe
355

<210> 13

<211> 359

<212> PRT

<213> Mus sp.

<400> 13

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Asp Cys Gly Leu Phe
 355

<210> 14
 <211> 353
 <212> PRT
 <213> Mus sp.

<400> 14
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu
 50 55 60
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Gln Tyr Glu Leu
 340 345 350

Leu

<210> 15

<211> 359

<212> PRT

<213> Homo sapiens

<400> 15

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
 20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly
 35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
 115 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
 165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320

Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350

Leu Lys Glu Tyr Asn Ala Val
 355

<210> 16

<211> 353

<212> PRT

<213> Homo sapiens

<400> 16

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15

Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
 50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110

Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr Val Asp Ala Ile Lys Ser
 115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160

Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Ala
340 345 350

Val

<210> 17

<211> 353

<212> PRT

<213> Homo sapiens

<400> 17

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
 340 345 350
 Val

<210> 18
 <211> 353
 <212> PRT
 <213> Homo sapiens

<400> 18
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu
 50 55 60
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
 245 250 255
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
 260 265 270
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
 275 280 285
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu
 290 295 300
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser
 305 310 315 320
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
 325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Asp Cys Gly Leu
 340 345 350

Phe

<210> 19
 <211> 353
 <212> PRT
 <213> Homo sapiens

<400> 19
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu
 50 55 60
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala
 65 70 75 80
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys
 85 90 95
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val
 100 105 110
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser
 115 120 125
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
 130 135 140
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg
 145 150 155 160
 Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val
 165 170 175
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser
 180 185 190
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
 195 200 205
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
 210 215 220
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
 225 230 235 240

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<210> 20
<211> 359
<212> PRT
<213> Homo sapiens
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Met 1	Thr	Leu	Glu	Ser 5	Ile	Met	Ala	Cys	Cys 10	Leu	Ser	Glu	Glu	Ala 15	Lys
Glu	Ala	Arg	Arg 20	Ile	Asn	Asp	Glu	Ile 25	Glu	Arg	Gln	Leu	Arg 30	Arg	Asp
Lys	Arg	Asp 35	Ala	Arg	Arg	Glu	Leu 40	Lys	Leu	Leu	Leu	Leu 45	Gly	Thr	Gly
Glu	Ser 50	Gly	Lys	Ser	Thr	Phe 55	Ile	Lys	Gln	Met	Arg 60	Ile	Ile	His	Gly
Ser 65	Asp	Tyr	Ser	Asp 70	Glu	Asp	Lys	Arg	Gly	Phe 75	Thr	Lys	Leu	Val	Tyr 80
Gln	Asn	Ile	Phe	Thr 85	Ala	Met	Gln	Ala	Met 90	Ile	Arg	Ala	Met 95	Asp	Thr
Leu	Lys	Ile 100	Pro	Tyr	Lys	Tyr	Glu	His 105	Asn	Lys	Ala	His 110	Ala	Gln	Leu
Val	Arg	Glu 115	Val	Asp	Val	Glu	Lys 120	Val	Ser	Ala	Phe	Asp 125	Val	Pro	Asp
Tyr	Ala 130	Ala	Ile	Lys	Ser	Leu 135	Trp	Asn	Asp	Pro	Gly 140	Ile	Gln	Glu	Cys

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
 165 170 175
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Glu Tyr Asn Leu Val
 355

<210> 21
 <211> 359
 <212> PRT
 <213> Homo sapiens

<400> 21
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly
 35 40 45

Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly	50	55	60	
Ser	Asp	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr	65	70	75	80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr	85	90	95	
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu	100	105	110	
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp	115	120	125	
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys	130	135	140	
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr	145	150	155	160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln	165	170	175	
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr	180	185	190	
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly	195	200	205	
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr	210	215	220	
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val	225	230	235	240
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg	245	250	255	
Thr	Ile	Ile	Thr	Tyr	Pro	Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe	260	265	270	
Leu	Asn	Lys	Lys	Asp	Leu	Leu	Glu	Glu	Lys	Ile	Met	Tyr	Ser	His	Leu	275	280	285	
Val	Asp	Tyr	Phe	Pro	Glu	Tyr	Asp	Gly	Pro	Gln	Arg	Asp	Ala	Gln	Ala	290	295	300	
Ala	Arg	Glu	Phe	Ile	Leu	Lys	Met	Phe	Val	Asp	Leu	Asn	Pro	Asp	Ser	305	310	315	320
Asp	Lys	Ile	Ile	Tyr	Ser	His	Phe	Thr	Cys	Ala	Thr	Asp	Thr	Glu	Asn	325	330	335	
Ile	Arg	Phe	Val	Phe	Ala	Ala	Val	Lys	Asp	Thr	Ile	Leu	Gln	Leu	Asn	340	345	350	

Leu Lys Glu Tyr Asn Leu Val
355

<210> 22
<211> 359
<212> PRT
<213> Homo sapiens

<400> 22
Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15
Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
20 25 30
Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45
Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60
Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80
Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95
Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110
Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
115 120 125
Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140
Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160
Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
165 170 175
Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190
Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205
Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220
Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
225 230 235 240
Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Asp Cys Gly Leu Phe
 355

<210> 23
 <211> 359
 <212> PRT
 <213> Homo sapiens

<400> 23
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
 35 40 45
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60
 Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
 115 120 125
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
 165 170 175
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Asp Cys Gly Leu Phe
 355

<210> 24
 <211> 353
 <212> PRT
 <213> Homo sapiens

<400> 24
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn
 1 5 10 15
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg
 20 25 30
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu
 50 55 60

Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr	Gln	Asn	Ile	Phe	Thr	Ala	
65					70					75					80	
Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr	Leu	Lys	Ile	Pro	Tyr	Lys	
				85					90					95		
Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu	Val	Arg	Glu	Val	Asp	Val	
			100					105					110			
Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp	Tyr	Ala	Ala	Ile	Lys	Ser	
		115					120					125				
Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys	Tyr	Asp	Arg	Arg	Arg	Glu	
	130					135					140					
Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr	Leu	Asn	Asp	Leu	Asp	Arg	
145					150					155					160	
Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln	Gln	Asp	Val	Leu	Arg	Val	
				165					170					175		
Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr	Pro	Phe	Asp	Leu	Gln	Ser	
			180					185					190			
Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly	Gln	Arg	Ser	Glu	Arg	Arg	
		195					200					205				
Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr	Ser	Ile	Met	Phe	Leu	Val	
	210					215					220					
Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val	Glu	Ser	Asp	Asn	Glu	Asn	
225					230					235					240	
Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg	Thr	Ile	Ile	Thr	Tyr	Pro	
				245					250					255		
Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe	Leu	Asn	Lys	Lys	Asp	Leu	
			260					265					270			
Leu	Glu	Glu	Lys	Ile	Met	Tyr	Ser	His	Leu	Val	Asp	Tyr	Phe	Pro	Glu	
		275					280					285				
Tyr	Asp	Gly	Pro	Gln	Arg	Asp	Ala	Gln	Ala	Ala	Arg	Glu	Phe	Ile	Leu	
	290					295					300					
Lys	Met	Phe	Val	Asp	Leu	Asn	Pro	Asp	Ser	Asp	Lys	Ile	Ile	Tyr	Ser	
305					310					315					320	
His	Phe	Thr	Cys	Ala	Thr	Asp	Thr	Glu	Asn	Ile	Arg	Phe	Val	Phe	Ala	
			325						330					335		
Ala	Val	Lys	Asp	Thr	Ile	Leu	Gln	Leu	Asn	Leu	Lys	Gln	Tyr	Glu	Leu	
			340					345					350			

Leu

<210> 25
 <211> 359
 <212> PRT
 <213> Homo sapiens

<400> 25

Met	Thr	Leu	Glu	Ser	Ile	Met	Ala	Cys	Cys	Leu	Ser	Glu	Glu	Ala	Lys	1		5		10		15
Glu	Ala	Arg	Arg	Ile	Asn	Asp	Glu	Ile	Glu	Arg	His	Val	Arg	Arg	Asp	20		25		30		
Lys	Arg	Asp	Ala	Arg	Arg	Glu	Leu	Lys	Leu	Leu	Leu	Leu	Gly	Thr	Gly	35		40		45		
Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly	50		55		60		
Ser	Asp	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr	65		70		75		80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr	85		90		95		
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu	100		105		110		
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp	115		120		125		
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys	130		135		140		
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr	145		150		155		160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln	165		170		175		
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr	180		185		190		
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly	195		200		205		
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr	210		215		220		
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val	225		230		235		240
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg	245		250		255		
Thr	Ile	Ile	Thr	Tyr	Pro	Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe	260		265		270		

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350

Leu Lys Gln Tyr Glu Leu Leu
 355

<210> 26

<211> 359

<212> PRT

<213> Homo sapiens

<400> 26

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
 20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
 35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
 50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
 65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
 100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
 115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
 165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
 180 185 190
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
 195 200 205
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
 210 215 220
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Gln Tyr Glu Leu Leu
 355

<210> 27
 <211> 983
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 27
 atggcccggt ccctgacttg gggctgctgt ccctggtgcc tgacagagga ggagaagact 60
 gccgccagaa tcgaccagga gatcaacagg attttgttgg aacagaaaaa acaagagcgc 120
 gaggaattga aactcctgct gttggggcct ggtgagagcg ggaagagtac gttcatcaag 180
 cagatgcgca tcattcacgg tgtgggctac tcggaggagg accgcagagc cttccggctg 240
 ctcattctacc agaacatctt cgtctccatg caggccatga tagatgcgat ggaccggctg 300
 cagatccctt tcagcaggcc tgacagcaag cagcacgcca gcctagtgat gaccaggac 360
 ccctataaag tgagcacatt cgagaagcca tatgcagtgg ccattgcagta cctgtggcgg 420
 gacgcgggca tccgtgcatg ctacgagcga aggcgtgaat tccaccttct ggactccgcg 480
 gtgtattacc tgtcacacct gggcgtagga aatggattca ctgttttgag aacgtgattg 540
 ccctcatcta cctggcctcc ctgagcgagt atgaccagtg cctagaggag aacgatcagg 600
 agaaccgcat ggaggagagt ctcgctctgt tcagcacgat cctagagctg ccctggttca 660

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agagcacctc ggtcatcctc ttcttcaaca agacggacat cctggaagat aagattcaca 720
cctccacact ggccacatac ttccccagct tccagggacc ccggcgagac gcagaggccg 780
ccaagagctt catcttggac atgtatgcgc gcgtgtacgc gagctgcgca gagccccagg 840
acggtggcag gaaaggctcc cgcgcgcgcc gcttcttcgc acacttcacc tgtgccacgg 900
acacgcaaag cgtccgcagc gtgttcaagg acgtgcggga ctcggtgctg gcccggtacc 960
tggacgagat caacctgctg tga                                     983

```

```

<210> 28
<211> 18
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

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```

<400> 28
gactgtggcc tcttctga                                     18

```

```

<210> 29
<211> 18
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

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```

<400> 29
gagtacaatc tgggtctga                                     18

```

```

<210> 30
<211> 18
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

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```

<400> 30
cagtatgagc tcttgtga                                     18

```

```

<210> 31
<211> 18
<212> DNA
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

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```

<400> 31
gagtgcggcc tctactga                                     18

```

<210> 32
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 32
ggatgcggac tctactga 18

<210> 33
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 33
tacatcggcc tctgctga 18

<210> 34
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 34
gacatcatgc tccaatga 18

<210> 35
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 35
caactaatgc tccaatga 18

<210> 36
<211> 18
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 36

caccaggttg aactctga

18

<210> 37

<211> 359

<212> PRT

<213> Homo sapiens

<400> 37

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
115 120 125Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
165 170 175Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
 225 230 235 240
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
 245 250 255
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
 260 265 270
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
 275 280 285
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
 290 295 300
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
 305 310 315 320
 Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
 325 330 335
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
 340 345 350
 Leu Lys Glu Tyr Asn Leu Val
 355

<210> 38
 <211> 374
 <212> PRT
 <213> Homo sapiens

<400> 38
 Met Ala Arg Ser Leu Thr Trp Gly Cys Cys Pro Trp Cys Leu Thr Glu
 1 5 10 15
 Glu Glu Lys Thr Ala Ala Arg Ile Asp Gln Glu Ile Asn Arg Ile Leu
 20 25 30
 Leu Glu Gln Lys Lys Gln Glu Arg Glu Glu Leu Lys Leu Leu Leu Leu
 35 40 45
 Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile
 50 55 60
 Ile His Gly Val Gly Tyr Ser Glu Glu Asp Arg Arg Ala Phe Arg Leu
 65 70 75 80
 Leu Ile Tyr Gln Asn Ile Phe Val Ser Met Gln Ala Met Ile Asp Ala
 85 90 95
 Met Asp Arg Leu Gln Ile Pro Phe Ser Arg Pro Asp Ser Lys Gln His
 100 105 110
 Ala Ser Leu Val Met Thr Gln Asp Pro Tyr Lys Val Ser Thr Phe Glu
 115 120 125

Lys Pro Tyr Ala Val Ala Met Gln Tyr Leu Trp Arg Asp Ala Gly Ile
 130 135 140

Arg Ala Cys Tyr Glu Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala
 145 150 155 160

Val Tyr Tyr Leu Ser His Leu Glu Arg Ile Ser Glu Asp Ser Tyr Ile
 165 170 175

Pro Thr Ala Gln Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile
 180 185 190

Asn Glu Tyr Cys Phe Ser Val Lys Lys Thr Lys Leu Arg Ile Val Asp
 195 200 205

Val Gly Gly Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu
 210 215 220

Asn Val Ile Ala Leu Ile Tyr Leu Ala Ser Leu Ser Glu Tyr Asp Gln
 225 230 235 240

Cys Leu Glu Glu Asn Asp Gln Glu Asn Arg Met Glu Glu Ser Leu Ala
 245 250 255

Leu Phe Ser Thr Ile Leu Glu Leu Pro Trp Phe Lys Ser Thr Ser Val
 260 265 270

Ile Leu Phe Leu Asn Lys Thr Asp Ile Leu Glu Asp Lys Ile His Thr
 275 280 285

Ser His Leu Ala Thr Tyr Phe Pro Ser Phe Gln Gly Pro Arg Arg Asp
 290 295 300

Ala Glu Ala Ala Lys Ser Phe Ile Leu Asp Met Tyr Ala Arg Val Tyr
 305 310 315 320

Ala Ser Cys Ala Glu Pro Gln Asp Gly Gly Arg Lys Gly Ser Arg Ala
 325 330 335

Arg Arg Phe Phe Ala His Phe Thr Cys Ala Thr Asp Thr Gln Ser Val
 340 345 350

Arg Ser Val Phe Lys Asp Val Arg Asp Ser Val Leu Ala Arg Tyr Leu
 355 360 365

Asp Glu Ile Asn Leu Leu
 370

<210> 39

<211> 374

<212> PRT

<213> Homo sapiens

<400> 39

Met Ala Arg Ser Leu Thr Trp Arg Cys Cys Pro Trp Cys Leu Thr Glu
 1 5 10 15

Asp	Glu	Lys	Ala	Ala	Ala	Arg	Val	Asp	Gln	Glu	Ile	Asn	Arg	Ile	Leu	20	25	30	
Leu	Glu	Gln	Lys	Lys	Gln	Asp	Arg	Gly	Glu	Leu	Lys	Leu	Leu	Leu	Leu	35	40	45	
Gly	Pro	Gly	Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	50	55	60	
Ile	His	Gly	Ala	Gly	Tyr	Ser	Glu	Glu	Glu	Arg	Lys	Gly	Phe	Arg	Pro	65	70	75	80
Leu	Val	Tyr	Gln	Asn	Ile	Phe	Val	Ser	Met	Arg	Ala	Met	Ile	Glu	Ala	85	90	95	
Met	Glu	Arg	Leu	Gln	Ile	Pro	Phe	Ser	Arg	Pro	Glu	Ser	Lys	His	His	100	105	110	
Ala	Ser	Leu	Val	Met	Ser	Gln	Asp	Pro	Tyr	Lys	Val	Thr	Thr	Phe	Glu	115	120	125	
Lys	Arg	Tyr	Ala	Ala	Ala	Met	Gln	Trp	Leu	Trp	Arg	Asp	Ala	Gly	Ile	130	135	140	
Arg	Ala	Cys	Tyr	Glu	Arg	Arg	Arg	Glu	Phe	His	Leu	Leu	Asp	Ser	Ala	145	150	155	160
Val	Tyr	Tyr	Leu	Ser	His	Leu	Glu	Arg	Ile	Thr	Glu	Glu	Gly	Tyr	Val	165	170	175	
Pro	Thr	Ala	Gln	Asp	Val	Leu	Arg	Ser	Arg	Met	Pro	Thr	Thr	Gly	Ile	180	185	190	
Asn	Glu	Tyr	Cys	Phe	Ser	Val	Gln	Lys	Thr	Asn	Leu	Arg	Ile	Val	Asp	195	200	205	
Val	Gly	Gly	Gln	Lys	Ser	Glu	Arg	Lys	Lys	Trp	Ile	His	Cys	Phe	Glu	210	215	220	
Asn	Val	Ile	Ala	Leu	Ile	Tyr	Leu	Ala	Ser	Leu	Ser	Glu	Tyr	Asp	Gln	225	230	235	240
Cys	Leu	Glu	Glu	Asn	Asn	Gln	Glu	Asn	Arg	Met	Lys	Glu	Ser	Leu	Ala	245	250	255	
Leu	Phe	Gly	Thr	Ile	Leu	Glu	Leu	Pro	Trp	Phe	Lys	Ser	Thr	Ser	Val	260	265	270	
Ile	Leu	Phe	Leu	Asn	Lys	Thr	Asp	Ile	Leu	Glu	Glu	Lys	Ile	Pro	Thr	275	280	285	
Ser	His	Leu	Ala	Thr	Tyr	Phe	Pro	Ser	Phe	Gln	Gly	Pro	Lys	Gln	Asp	290	295	300	
Ala	Glu	Ala	Ala	Lys	Arg	Phe	Ile	Leu	Asp	Met	Tyr	Thr	Arg	Met	Tyr	305	310	315	320

Thr Gly Cys Val Asp Gly Pro Glu Gly Ser Lys Lys Gly Ala Arg Ser
 325 330 335

Arg Arg Leu Phe Ser His Tyr Thr Cys Ala Thr Asp Thr Gln Asn Ile
 340 345 350

Arg Lys Val Phe Lys Asp Val Arg Asp Ser Val Leu Ala Arg Tyr Leu
 355 360 365

Asp Glu Ile Asn Leu Leu
 370

<210> 40

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative
 N-terminal peptide sequence

<400> 40

Met Thr Leu Glu Ser Ile
 1 5

<210> 41

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 hemagglutinin epitope tag

<400> 41

Asp Val Pro Asp Tyr Ala
 1 5

<210> 42

<211> 11

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative
 oligonucleotide

<400> 42

ggcgcgccgc c